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10/848,824	05/19/2004	Yaron Kranz	62976(52398)	4777

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EDWARDS & ANGELL, LLP
P.O. BOX 55874
BOSTON, MA 02205

EXAMINER

SCHWARTZ, JORDAN MARC

ART UNIT	PAPER NUMBER
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2873

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/848,824

Applicant(s)

KRANZ ET AL.

Examiner

Jordan M. Schwartz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/04, 3/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date, ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Foreign Reference.

DETAILED ACTION***Claim Objections***

Claims 20 and 21 are objected to for the following reasons. Since the intended meaning could be determined from the specification and the Figures, 112 rejections were not made but instead these lack of clarity issues are being raised in the following claim objections.

With respect to claim 20, the claimed "selected pupil-illuminated light source" creates a lack of clarity because the claimed "selected" lacks an antecedent basis. It is presumed that the word "selected" was inadvertently inserted into the claim and it is suggested that applicant delete the word "selected" for clarity.

With respect to claim 21, the claimed "at least one of said reference light sources aligned with at least a portion of..." creates a lack of clarity and the presumed meaning is "at least one of said reference light sources is aligned with at least a portion of..."

Claim Rejections - 35 USC § 112

Claim 38 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 38, the claimed "said display light beam" lacks an antecedent basis and it is not clear if claim 38 intended to depend from a different claim or if limitations were inadvertently omitted from claim 38 rendering

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the claim vague and indefinite. For purposes of examination it is presumed that claim 38 meant to depend from claim 36.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-24, 28-47, 51-53 are rejected under 35 U.S.C. 102(e) as being anticipated by Ashkenazi et al.

Ashkenazi et al reads on these claims by disclosing the limitations therein including the following: a system for tracking an eye (paragraph 238) comprising an image detector (Figure 13, "3102", paragraph 241); a pupil illuminating light source as claimed (Figure 13, "3106", paragraph 245); at least one reference light source to illuminate a portion of a user's face (Figure 13, either "3108" or "3110", paragraphs 248-249); an image processor coupled to the detector to analyze the eye image (Figure 13, "3132", paragraph 242); a portion of the pupil illuminated light is directed to the detector (Figure 13); a portion of the reference beam being reflected to the image detector (Figure 13); the image processor

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identifies the pupil and reference region and determines the line of sight according to both regions (paragraph 250); the image processor determining line of sight based on the coordinates of the center of the pupil (paragraphs 245 and 250); an optical relay to receive light from either the pupil illuminating or reference beam and directing the light to the eye (Figure 13, "3114", paragraph 240); the processor controlling the pupil light source to increase or decrease intensity based on ambient light (paragraphs 96 and 246); an ambient light detector with the processor controlling the intensity based on the ambient light (paragraphs 96, 246, 283); the image processor controlling a light source according to the eye (paragraph 243); a beam splitter reflecting and transmitting as per claim 7 (Figure 13, "3104", paragraph 239); further comprising a helmet visor partially reflecting a selected beam toward the eye (paragraph 256); the visor at least partially transmitting to allow the user to view the scene (paragraph 258); further comprising at least one display light source and display with the target outside of the field of the display (Figure 13, "3112", paragraphs 240 and 272); the visor at least spherical (257); the display light source displaying a target marking and a weapon system actuated when the marking matches the line of sight (paragraph 281); the processor analyzing a response to a light beam to examine reflexes (paragraph 267); the image processor registering a logic display with the field of view (paragraphs 268-269); the display image is collimated (Figure 13); a collimator to collimate the light from the display (Figure 13); the processor controlling the display light source according to the eye image (paragraphs 87-88); a portion of the reference light source aligned with the

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optical axis of the display light source (Figure 13); the recognizable portion of the face as either the cornea or eyelids (paragraphs 248-249); determining a physiological state of the user as fatigue (paragraph 253); the processor initiating an alarm according to the physiological state (paragraph 254); directing the pupil illuminate light beam first toward the eye and then toward the image detector (Figure 13); directing the reference light beam first toward the face of the user and then toward the image detector (Figure 13); collimating the reference light beam (Figure 13, reference light beam "3110" and collimator "3114", paragraph 248); identifying a target, prompting and receiving confirmation, and directing a weapon to the target (paragraphs 267-269); a head and vehicle position and orientation tracker (paragraph 261); and an audio signal indicating predetermined states or operation modes (paragraph 81).

Claims 1-3, 6-8, 14, 18-22, 31-38, 40, and 42-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al.

Sato et al reads on these claims by disclosing the limitations therein including the following: a system for tracking an eye (abstract re "sight line detecting") comprising an image detector (Figure 2, "117", column 4, lines 24-35); a pupil illuminating light source as claimed (Figure 2, "120", column 4, lines 36-41); at least one reference light source to illuminate a portion of a user's face (Figure 2, "115", abstract, column 1, lines 15-26, column 4, lines 14-35); an image processor coupled to the detector to analyze the eye image (Figure 2, "controller"); a portion of the pupil illuminated light is directed to the detector (Figure 2, column 4, lines 36-57); a portion of the reference beam being reflected

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to the image detector (Figure 2, column 4, lines 8-35); the image processor identifies the pupil and reference region and determines the line of sight according to both regions (abstract, column 7, lines 52-55); the image processor determining line of sight based on the coordinates of the center of the pupil (abstract, column 7, lines 52-55); an optical relay to receive light from either the pupil illuminating or reference beam and directing the light to the eye (Figure 2 with lens "116" as an "optical relay"); the image processor controlling a light source according to the eye (column 4, line 47 to column 5, line 3); a beam splitter reflecting and transmitting as per claim 7 (Figure 2, "119"). The claimed "mounted on a helmet" goes to the intended use of the eye tracking system. It has been held that that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Sato et al further discloses at least one display light source for a display image (Figures 2 and 13 i.e. the system is viewed through a display and any of the light sources providing illumination can be considered as the display light source ; the display image and reference light beams collimated (Figure 2, column 4, lines 14-23 re illuminating the eye as a substantially parallel beam); a portion of the reference light source aligned with the optical axis of the display light source (Figure 2); the recognizable portion of the face as the cornea (column 1, lines 15-27); directing the pupil illuminate light beam first toward the eye and then toward the image detector (Figure 2); and

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directing the reference light beam first toward the face of the user and then toward the image detector (Figure 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25-27 and 48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashkenazi et al in view of Chmielewski et al.

Ashkenazi et al discloses as is set forth above but does not specifically disclose the eye tracking system determining the physiological state by comparing the eye image with a reference model or statistically analyzing the eye image and determining temporal features. Chmielewski et al teaches that in an eye tracking system in which the physiological state of the user is being determined from the eye tracking, that it is desirable to either compare the eye image with a reference model and/or to statistically analyze the eye and determine temporal features for the purpose of providing an improved means of determining and analyzing the physiological state of an individual from derived eye information (abstract, paragraph 0026, claim 5). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the eye tracking system of Ashkenazi et al as further determining the physiological state by comparing the eye image with a reference model or

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statistically analyzing the eye image and determining temporal features since Chmielewski et al teaches that in an eye tracking system in which the physiological state of the user is being determined from the eye tracking, that it is desirable to either compare the eye image with a reference model and/or to statistically analyze the eye and determine temporal features for the purpose of providing an improved means of determining and analyzing the physiological state of an individual from derived eye information.

Prior Art Citations

Japanese document number 2001-61785, Amir et al publication number 2003/0098954, Ohtani patent number 6,507,702, Kohayakawa patent number 5,889,577, Suzuki patent number 5,491,532 are being cited herein to show references that would have read on or made obvious a number of the above rejected claims, however, such rejections would have been repetitive.

Ben-Ari et al patent number 6,667,694 (cited on applicant's IDS) would have made obvious (as a teaching reference) a number of the above rejected claims, however, such rejections would have been repetitive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jordan M. Schwartz whose telephone number is (571) 272-2337. The examiner can normally be reached on Monday to Friday (8:30 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached at (571) 272-2333. The fax

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phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jordan M. Schwartz
Primary Examiner
Art Unit 2873
March 15, 2007